

What is claimed is:

1           1. A display apparatus for displaying an image on a display  
2 device which includes rows of pixels, each pixel composed of  
3 three sub-pixels that align in a lengthwise direction of the  
4 pixel rows and emit light of three primary colors respectively,  
5 the display apparatus comprising:

6           a front image storage unit operable to store color values  
7 of sub-pixels that constitute a front image to be displayed on  
8 the display device;

9           a calculation unit operable to calculate a dissimilarity  
10 level of a target sub-pixel to one or more sub-pixels that are  
11 adjacent to the target sub-pixel in the lengthwise direction  
12 of the pixel rows, from color values of first-target-range  
13 sub-pixels composed of the target sub-pixel and the one or more  
14 adjacent sub-pixels stored in the front image storage unit;

15           a superimposing unit operable to generate, from color  
16 values of the front image stored in the front image storage unit  
17 and color values of an image currently displayed on the display  
18 device, color values of sub-pixels constituting a composite image  
19 of the front image and the currently displayed image;

20           a filtering unit operable to smooth out color values of  
21 second-target-range sub-pixels of the composite image that  
22 correspond to the first-target-range sub-pixels, by assigning  
23 weights, which are determined in accordance with the  
24 dissimilarity level, to the second-target-range sub-pixels; and

25           a displaying unit operable to display the composite image  
26 based on the color values thereof after the smoothing out.

1           2. The display apparatus of Claim 1, wherein  
2           the calculation unit calculates a temporary dissimilarity  
3   level for each combination of the first-target-range sub-pixels,  
4   from color values of the first-target-range sub-pixels, and  
5   regards a largest temporary dissimilarity level among results  
6   of the calculation to be the dissimilarity level.

1           3. The display apparatus of Claim 2, wherein  
2           the first-target-range sub-pixels and the  
3   second-target-range sub-pixels are identical with each other  
4   in number and positions in the display device.

1           4. The display apparatus of Claim 1, wherein  
2           the filtering unit performs the smoothing out of the  
3   second-target-range sub-pixels if the dissimilarity level  
4   calculated by the calculation unit is greater than a  
5   predetermined threshold value, and does not perform the smoothing  
6   out if the calculated dissimilarity level is no greater than  
7   the predetermined threshold value.

1           5. A display apparatus for displaying an image on a display  
2   device which includes rows of pixels, each pixel composed of  
3   three sub-pixels that align in a lengthwise direction of the  
4   pixel rows and emit light of three primary colors respectively,  
5   the display apparatus comprising:  
6           a front image storage unit operable to store color values  
7   and transparency values of sub-pixels that constitute a front

8 image to be displayed on the display device, where the  
9 transparency values indicate degrees of transparency of  
10 sub-pixels of the front image when the front image is superimposed  
11 on an image currently displayed on the display device;

12 a calculation unit operable to calculate a dissimilarity  
13 level of a target sub-pixel to one or more sub-pixels that are  
14 adjacent to the target sub-pixel in the lengthwise direction  
15 of the pixel rows, from at least one of (i) color values and  
16 (ii) transparency values of first-target-range sub-pixels  
17 composed of the target sub-pixel and the one or more adjacent  
18 sub-pixels stored in the front image storage unit;

19 a superimposing unit operable to generate, from color  
20 values of the front image stored in the front image storage unit  
21 and color values of the image currently displayed on the display  
22 device, color values of sub-pixels constituting a composite image  
23 of the front image and the currently displayed image;

24 a filtering unit operable to smooth out color values of  
25 second-target-range sub-pixels of the composite image that  
26 correspond to the first-target-range sub-pixels, by assigning  
27 weights, which are determined in accordance with the  
28 dissimilarity level, to the second-target-range sub-pixels; and

29 a displaying unit operable to display the composite image  
30 based on the color values thereof after the smoothing out.

1 6. The display apparatus of Claim 5, wherein  
2 the calculation unit calculates a temporary dissimilarity  
3 level for each combination of the first-target-range sub-pixels,

4 from at least one of (i) color values and (ii) transparency values  
5 of the first-target-range sub-pixels, and regards a largest  
6 temporary dissimilarity level among results of the calculation  
7 to be the dissimilarity level.

1           7. The display apparatus of Claim 6, wherein  
2           the first-target-range sub-pixels and the  
3 second-target-range sub-pixels are identical with each other  
4 in number and positions in the display device.

1           8. The display apparatus of Claim 5, wherein  
2           the filtering unit performs the smoothing out of the  
3 second-target-range sub-pixels if the dissimilarity level  
4 calculated by the calculation unit is greater than a  
5 predetermined threshold value, and does not perform the smoothing  
6 out if the calculated dissimilarity level is no greater than  
7 the predetermined threshold value.

1           9. A display method for displaying an image on a display  
2 device which includes rows of pixels, each pixel composed of  
3 three sub-pixels that align in a lengthwise direction of the  
4 pixel rows and emit light of three primary colors respectively,  
5 the display method comprising:

6           a front image acquiring step for acquiring color values  
7 of first-target-range sub-pixels composed of a target sub-pixel  
8 and one or more sub-pixels that are adjacent to the target  
9 sub-pixel in the lengthwise direction of the pixel rows, the

10 first-target-range sub-pixels are included in sub-pixels that  
11 constitute a front image to be displayed on the display device;  
12 a calculation step for calculating a dissimilarity level  
13 of the target sub-pixel to the one or more sub-pixels, from the  
14 color values of the first-target-range sub-pixels acquired in  
15 the front image acquiring step;  
16 a superimposing step for generating, from the color values  
17 of the front image acquired in the front image acquiring step  
18 and color values of an image currently displayed on the display  
19 device, color values of sub-pixels constituting a composite image  
20 of the front image and the currently displayed image;  
21 a filtering step for smoothing out color values of  
22 second-target-range sub-pixels of the composite image that  
23 correspond to the first-target-range sub-pixels, by assigning  
24 weights, which are determined in accordance with the  
25 dissimilarity level, to the second-target-range sub-pixels; and  
26 a displaying step for displaying the composite image based  
27 on the color values thereof after the smoothing out.

1 10. A display method for displaying an image on a display  
2 device which includes rows of pixels, each pixel composed of  
3 three sub-pixels that align in a lengthwise direction of the  
4 pixel rows and emit light of three primary colors respectively,  
5 the display method comprising:

6 a front image acquiring step for acquiring color values  
7 and transparency values of first-target-range sub-pixels  
8 composed of a target sub-pixel and one or more sub-pixels that

9 are adjacent to the target sub-pixel in the lengthwise direction  
10 of the pixel rows, the first-target-range sub-pixels are included  
11 in sub-pixels that constitute a front image to be displayed on  
12 the display device, where the transparency values indicate  
13 degrees of transparency of sub-pixels of the front image when  
14 the front image is superimposed on an image currently displayed  
15 on the display device;

16 a calculation step for calculating a dissimilarity level  
17 of the target sub-pixel to the one or more sub-pixels, from at  
18 least one of the (i) color values and (ii) transparency values  
19 of the first-target-range sub-pixels acquired in the front image  
20 acquiring step;

21 a superimposing step for generating, from the color values  
22 of the front image acquired in the front image acquiring step  
23 and color values of the currently displayed image, color values  
24 of sub-pixels constituting a composite image of the front image  
25 and the currently displayed image;

26 a filtering step for smoothing out color values of  
27 second-target-range sub-pixels of the composite image that  
28 correspond to the first-target-range sub-pixels, by assigning  
29 weights, which are determined in accordance with the  
30 dissimilarity level, to the second-target-range sub-pixels; and

31 a displaying step for displaying the composite image based  
32 on the color values thereof after the smoothing out.

1 11. A display program for displaying an image on a display  
2 device which includes rows of pixels, each pixel composed of

3 three sub-pixels that align in a lengthwise direction of the  
4 pixel rows and emit light of three primary colors respectively,  
5 the display program causing a computer to execute:

6 a front image acquiring step for acquiring color values  
7 of first-target-range sub-pixels composed of a target sub-pixel  
8 and one or more sub-pixels that are adjacent to the target  
9 sub-pixel in the lengthwise direction of the pixel rows, the  
10 first-target-range sub-pixels are included in sub-pixels that  
11 constitute a front image to be displayed on the display device;

12 a calculation step for calculating a dissimilarity level  
13 of the target sub-pixel to the one or more sub-pixels, from the  
14 color values of the first-target-range sub-pixels acquired in  
15 the front image acquiring step;

16 a superimposing step for generating, from the color values  
17 of the front image acquired in the front image acquiring step  
18 and color values of an image currently displayed on the display  
19 device, color values of sub-pixels constituting a composite image  
20 of the front image and the currently displayed image;

21 a filtering step for smoothing out color values of  
22 second-target-range sub-pixels of the composite image that  
23 correspond to the first-target-range sub-pixels, by assigning  
24 weights, which are determined in accordance with the  
25 dissimilarity level, to the second-target-range sub-pixels; and

26 a displaying step for displaying the composite image based  
27 on the color values thereof after the smoothing out.

1 12. A display program for displaying an image on a display

2 device which includes rows of pixels, each pixel composed of  
3 three sub-pixels that align in a lengthwise direction of the  
4 pixel rows and emit light of three primary colors respectively,  
5 the display program causing a computer to execute:

6       a front image acquiring step for acquiring color values  
7 and transparency values of first-target-range sub-pixels  
8 composed of a target sub-pixel and one or more sub-pixels that  
9 are adjacent to the target sub-pixel in the lengthwise direction  
10 of the pixel rows, the first-target-range sub-pixels are included  
11 in sub-pixels that constitute a front image to be displayed on  
12 the display device, where the transparency values indicate  
13 degrees of transparency of sub-pixels of the front image when  
14 the front image is superimposed on an image currently displayed  
15 on the display device;

16       a calculation step for calculating a dissimilarity level  
17 of the target sub-pixel to the one or more sub-pixels, from at  
18 least one of the (i) color values and (ii) transparency values  
19 of the first-target-range sub-pixels acquired in the front image  
20 acquiring step;

21       a superimposing step for generating, from the color values  
22 of the front image acquired in the front image acquiring step  
23 and color values of the currently displayed image, color values  
24 of sub-pixels constituting a composite image of the front image  
25 and the currently displayed image;

26       a filtering step for smoothing out color values of  
27 second-target-range sub-pixels of the composite image that  
28 correspond to the first-target-range sub-pixels, by assigning



29 weights, which are determined in accordance with the  
30 dissimilarity level, to the second-target-range sub-pixels; and  
31 a displaying step for displaying the composite image based  
32 on the color values thereof after the smoothing out.